

Remarks / Arguments

Claims 7-11 are pending this application. Claims 7-11 stand rejected. With this Amendment, claim 7 is amended.

In view of these amendments the applicants believe that all of the claims now present in the application – in their present form – are allowable.

It is submitted that each of the various rejections are overcome through the effect of the clarifying amendments or by various arguments presented herein.

If however, the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims now pending in the application, it is requested that the Examiner telephone John F. Moran, ESQ. At 973-724-6590, so that arrangements may be made for resolving such issues as expeditiously as possible.

Claim Rejections – 35 U.S.C. § 103

Claims 7-8 are rejected under the provisions of 35 U.S.C. § 103 as being unpatentable over Ingersoll (5,390,604) in view of Cole (US Statutory Invention Registry H776).

As the applicants will show, the cited combination does not render the claimed invention of the instant application obvious.

More particularly, neither of the cited references teach or suggest a method in which the actual time to apogee is measured – through the effect of an on-board sensor.

Specifically, Ingersoll discloses a method and apparatus for mortar fuze arming such that the early explosion of mortar shells are avoided because the fuze is not armed until it is halfway through its **expected** flight time. [emphasis supplied]

The Ingersoll patent discloses that the mortar fuze calculates the charge and angle of launch based on the turbine alternator frequency and Doppler frequency. From this calculation an additional calculation is made to determine the time of flight of the mortar round to its trajectory apex. Based upon this calculated time of flight information, the mortar fuze arming system electronically arms the fuze at the apex of the flight of the mortar round, using existing arming circuits present in the M734 proximity mortar round.

In sharp contrast, the claimed invention of the instant application determines when the apogee is reached through the effect of a sensor on-board the projectile. From this apogee determination, the actual time between the launch of the projectile and the sensed apogee is measured. From this measured time, the time to a desired height of burst is then calculated. As claimed, the on-board sensor is one selected from the group consisting of accelerometric sensor, gyroscopic sensor, velocity sensor, global positioning sensor, inertial sensor, and MEMs

Importantly - and in sharp contrast to the teachings of the Ingersoll patent – the claimed invention determines when the apogee occurs through the effect of an on-board sensor, measures the actual time to apogee; and then **calculates** the time to height of burst detonation based upon this measured time.

There is simply no teaching or suggestion in the Ingersoll patent of such a method. Instead, Ingersoll teaches a method which estimates the time to apogee based upon an early measurement then looks up the time to apogee based upon that early estimate. There is simply no measuring taking place in Ingersoll.

Accordingly, the claimed invention provides a much more accurate determination of apogee and the actual measured time thereto, thereby providing a much more accurate calculation of the time to height of burst. Since these important claimed aspects of the present invention are not taught or suggested by the Ingersoll patent, the applicants submit that it cannot render the claimed invention obvious.

The remaining question then is whether the United States Statutory Invention Registration H776 of Cole can remedy these teaching deficiencies. The answer is no.

In the office action, the Examiner acknowledges that Ingersoll does not expressly disclose the method including measuring the time that it takes the projectile to reach its apogee after launch. The Examiner states however, that Cole does.

The applicants submit that the Examiner is mistaken in this assertion.

Cole teaches a flail which reduces the spin of a projectile in a recovery system which includes a parachute, a cable connected to the parachute, a swivel, and connection of the swivel to the projectile. The flail includes a plurality of flexible filaments and attachment for

attaching the filaments to the projectile near its front end. The filaments are attached to the projectile radial with respect to a spinning axis of the projectile. In use, the flexible filaments are deployed before the parachute is deployed in order to reduce shell spinning before the parachute is deployed. Alternatively, the filaments may be deployed at the same time or after the parachute is deployed.

And while the Cole registration does generally teach the use of a timer to permit the releases at predetermined times in the projectile trajectory, it too **does not – teach or suggest** either alone or in any combination - certain salient aspects of the present invention namely: the determination of its apogee through the effect of an on board sensor, **the measurement of the time to the apogee**; and the calculation of the time to a height of burst based upon that measured time to apogee.

Since these references – both alone and in the cited combination – fail to teach or suggest these important aspects of the claimed invention the applicants submit that they do not render it obvious.

In that regard, independent claim 7 as amended now recites – with particularly distinguishing aspects shown in bolded typeface:

“..A method of determining the time t_{HOB} to a desired Height Of Burst (HOB) of a projectile comprising the steps of:

- a. **determining, through the effect of a sensor on-board the projectile, when the projectile reaches its apogee after launch;**
- b. **measuring the actual time t_a that it takes said projectile to reach the apogee after launch;** and
- c. **calculating the time to the desired Height Of Burst t_{HOB} based upon the actual measured time t_a ;**

wherein said on-board sensor is one selected from the group consisting of: accelerometric sensor, gyroscopic sensor, velocity sensor, global positioning sensor, inertial sensor, and MEMs.” [emphasis supplied]

Since these aspects of the claimed invention are not taught or suggested by these references, the applicants submit that they cannot render the claimed invention obvious. Inasmuch as dependent claim 8 recites further distinguishes the claimed invention the

applicants submit that they too cannot be rendered obvious by the cited combination of references as neither – taken alone or in any combination – teach or suggest – either explicitly or implicitly – the inventive method as presently claimed in claims 7 or 8.

Claims 9-11 are rejected under the provisions of 35 USC 103(a) as being unpatentable over Ingersoll in view of Cole and Will et al as applied to claims 7 and 8 above. In rejecting these claims the Examiner states that Ingersoll, Cole and Will et al disclose the claimed invention except for the specific percentages and the specific height.

As the applicants have already shown however, neither Ingersoll nor Cole teach or suggest the distinguishing aspects of independent claim 7 and dependent claim 8. The only remaining question therefore is whether Will et al cures these teaching deficiencies. The applicants believe not.

Will et al discloses a “guidance information analyzer” – namely a circuit for a missile guidance system having a capacitor for supplying an output signal together with a plurality of silicon controlled rectifiers for applying or removing a supply voltage to the capacitor.

And while this circuit arguably does teach a missile fuzing system responsive to accept and discriminate guidance signals generated for a safing process, it does not teach or suggest the measurement of the time to apogee as now taught and claimed by the instant applicants.

As a result, the applicants submit that the cited combination of references does not render obvious the invention as claimed in independent claim 7, nor the further distinguishing aspects as recited in dependent claims 9-11.

Accordingly, the applicants respectfully request the Examiner to withdraw the rejections based upon 35 U.S.C. § 103.

Conclusion:

The applicants submit that all of the claims now present in the application – in their present form - fully comply with the provisions of 35 U.S.C. § 103 and are therefore allowable. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

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I hereby certify that this correspondence is being transmitted to the United States Patent and Trademark Office on September 30, 2008.

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